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**BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Application Number: 10/814,956
Filing Date: March 31, 2004
Appellant(s): LEWANDOWSKI ET AL.

Patrick S. Yoder
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed February 19, 2008 appealing from the Office action mailed September 28, 2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

| | | |
|---|---|---|
| 6,262,946 | KHURI-YAKUB et al | 07-2001 |
| 6,669,644 | MILLER | 12-2003 |
| 6,051,868 | WATANABE et al | 04-2000 |

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12 and 39 do not further limit the subject matter of claims 1 and 35, respectively, and more specifically, appear to contradict each other. It is vague and indefinite how, as claimed in claims 12 and 39, coating with an “electrically

conductive material that is grounded" further limits "a thin layer of insulating material".

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-10, 12, 35-37 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent to Khuri-Yakub et al ('946) when taken in view of Miller (644) and Watanabe et al ('868).

Per claim 1, Khuri-Yakub et al discloses a sensor device (see Fig. 10) that includes a multiplicity of sensor elements (12) arranged on the front surface of a substrate (11) with each sensor element (12) being in contact with material of the substrate (11). The device further includes a barrier (23) extending into but not completely through the substrate material to reduce the coupling or lateral propagation of a form of energy (Lamb waves) between any of the sensor elements.

The differences between claim 1 and the Khuri-Yakub et al device is the claim (a) specifies a multiplicity of barriers whereas in Fig. 10 only a single barrier is shown, and (b) the claim specifies that the barriers and adjoining portions of the substrate are coated with an insulating material.

Miller discloses a sensor device where a plurality of sensor elements (210) are arranged on a substrate (220). The substrate has a plurality of barriers or trenches (215) for reducing coupling or the lateral propagation energy between sensor elements (see col. 2, lines 2-4).

Watanabe et al discloses (col. 4,lines 25-28) a semiconductor device wherein trenches, used for reducing cross-talk, are also coated with silicon oxide or silicon nitride (insulators) for reducing cross-talk. As noted on col. 1, lines 16-19 and 63-64, crosstalk is a phenomenon where random, parasitic signals disturb the original signal propagation through a substrate.

Therefore, in as much as the sensor device of Khuri-Yakub et al includes a multiplicity of sensors, and Miller teaches that it is known to reduce coupling energy or laterally propagating energy in a substrate between plural sensor elements by using a

plurality of trenches or barriers, it would be obvious to one of ordinary skill in the art to include a multiplicity of barriers between the sensor elements (2) so as to provide for greater reduction of cross-coupling between the multiplicity of sensor elements. Further, in view of Watanabe et al, it would also be obvious to coat the trenches with an insulating material to further reduce the laterally propagating energy. Claim 1 is so rejected.

Dependent claims 2-5 are further provided by the cMUT array of Khuri-Yakub et al.

Per claims 6 and 35, the barrier (23) of Khuri-Yakub et al is a trench.

Claims 7-10, 12, 36, 37 and 39 are further provided for by the combination of the Khuri-Yakub et al, Miller and Watanabe et al patents.

**(10) Response to Argument.**

In response to appellants arguments directed to the 35 USC 112, second paragraph rejection, examiner disagrees that the rejection is based upon confusion between claim breath and indefiniteness. Although it is agreed that a patentee may be his/her own lexicographer, it is also well established that a dependent claim may not contradict a claim upon which it depends. In the instant case, the independent claims 1 and 35 specify that the barriers and their adjoining portions are "coated with a thin insulating material". Claims 12 and 39, which depend upon the independent claims, then specify that the trenches (barriers) are “coated with an electrically conductive material that is grounded”. There is a clear contradiction between the dependent claims

and the independent claims since coating with an electrically conductive layer is contradictory to coating with an insulating material. Based upon this, it is unclear how the dependent claims further limit the independent claims.

In response to appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

It is pointed out that Appellant's arguments are primarily concerned with what the secondary references to Miller and Watanabe do not show rather than what they do disclose and teach. First, Appellant argues that a specific feature of independent claims 1 and 35 is omitted from Miller since Miller shows that the barriers or trenches extend completely through the substrate material whereas in the instant claims the barriers or trenches extend into the substrate material but not completely through the material. This argument is not convincing since Appellant is arguing what Miller does not show and has failed to appreciate the reason that Miller was applied in the rejection and what Miller does show. Specifically, Miller is applied in the rejection for its teaching of the application of plural barriers or trenches. Whether the trenches or barriers extend completely through the substrate material or not completely through the substrate

material is irrelevant because of Khuri-Yakub et al. Khuri-Yakub et al is applied in the rejection for disclosing (a) that the trench or barrier is used for lateral energy propagation elimination and, (b) that the trench or barrier does not extend completely through the substrate material. What is being gleaned from Miller and applied to Khuri-Yakub et al is merely the teaching of using plural trenches or barriers.

Appellant also argues that the Miller barriers or trenches are not the same as the trenches or barriers of the instant claims because in Miller the barriers or trenches are electrically conductive. This argument is also not convincing since the electrically conductive barrier or trench that appellant is arguing as attributed to Miller is merely an alternative embodiment, but not a requirement for lateral energy propagation elimination within a substrate.

With respect to Watanabe, appellant argues that the use of insulating coatings within the barriers or trenches is for separating transistors or analog circuits which is unlike the separating of transducer arrays as disclosed in Khuri-Yakub et al. This argument is not convincing since both systems (transducer arrays and transistors) have the commonality of being arranged on a substrate material where the substrate material propagates crosstalk or lateral propagation which are interference phenomena that both systems look to eliminate. Thus, as much as appellant attempts to distinguish the systems of Khuri-Yakub et al and Watanabe, they still have a lot in common.

Appellant also argues that the modification of Khuri-Yakub et al by Watanabe would change the principle of operation of Khuri-Yakub et al since Khuri-Yakub et al and Watanabe teach contrastingly different intended purposes and principles of operation.

This argument is also not convincing. First, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In the instant case, the teaching of an insulating coating within a trench or barrier that is located within a substrate material for the purposes of reducing cross-talk or lateral propagation energy is sufficient teaching to one of ordinary skill in the art to modify Khuri-Yakub et al. Further, such a modification would in no way change the principle of operation of Khuri-Yakub et al since the objective is cross-talk or lateral propagation energy elimination and the only modification to Khuri-Yakub et al is the application of a coating on the surfaces and adjoining regions of the barriers or trenches, which is a modification well within the purview of one having ordinary skill in this art.

Finally, in response to appellant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the use of a plural barriers or trenches (as taught by Miller) between the multiple

transducers of Khuri-Yakub et al would have been obvious to one of ordinary skill in the art since crosstalk or lateral propagation energy between all the transducers would then be eliminated. Further, in view of Watanabe, the coating of the surfaces and adjoining portions of the plural barriers or trenches would also have been obvious to one of ordinary skill in the art in view of greater crosstalk or lateral propagation energy elimination.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Ian J. Lobo/

Primary Examiner, Art Unit 3662

Conferees:

Ijl /I. J. L./

TT /THT/

MJ /MJ/